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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,943	03/16/2001	Ralf Oestreicher	60,426-268	7794
24500	7590	07/13/2004		
SIEMENS CORPORATION INTELLECTUAL PROPERTY LAW DEPARTMENT 170 WOOD AVENUE SOUTH ISELIN, NJ 08830				EXAMINER NGUYEN, TAN QUANG
				ART UNIT 3661 PAPER NUMBER

DATE MAILED: 07/13/2004

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT PAPER

20040707

DATE MAILED:

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Commissioner for Patents

Tan Nguyen
TAN Q NGUYEN
Primary Examiner
Art Unit: 3661



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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 07/07/2004

Application Number: 09/810,943

Filing Date: March 16, 2001

Appellant(s): OESTREICHER ET AL.

KERRIE A. LABA
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 07, 2004.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct. Claims 64 and 65 which were unintentionally left out from the final rejection. However, such claims are identical with the rejected claims 72 and 73 and should be rejection under the same rationale as applied to claims 72 and 73.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of Claims*

Appellant's brief includes a statement that the claims do not stand or fall together.

(8) *ClaimsAppealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of Record*

No prior art is relied upon by the examiner in the rejection of the claims under appeal.

(10) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 36-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over the published Research Disclosure 39916 in view of Gognon (5,810,392) and Harris (3,661,220).
2. With respect to claim 36, the Research disclose teaches a seat frame, four load cells are attached between the seat frame and the seat track at the mounting points (see figure 1), and a vehicle occupant protection device responsive to the output of the load cells (see figure 2).
3. The Research disclosure does not explicitly disclose the use of weight sensor assemblies in the form of a strain gauge and a plurality of deflectable mounting structures which together bear the entire weight of the frame. However, Gagnon similarly discloses a seat occupant weight sensing system in which load cells can be mounted between a rigid member and a seat pan at four corners as shown in figure 3. Gagnon further suggests that each sensor may be for example a strain gauge, a load cell or a variable resistance pressure sensor (see at least column 5, lines 44-67). It would be obvious that the strain gauge can be used as the vehicle occupant weight sensor assemblies. In addition, Harris suggests a weighting device for used in vehicle which includes 4 load cells, each including a strain gauge mounting assembly as shown in at least figures 2 and 3. Harris further suggests that the resilient mounting structure 40 allows it to flex freely so that the beam always bend in the same way when applied forces, thereby improving system accuracy (see column 2, lines 23-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented the use of strain gauges mounted on a deflectable mounting

structure as taught in Gagnon and Harris as the load cells for sensing more accuracy occupant weight.

4. With respect to claim 37, the Research disclosure does disclose that the load cell is mounted on the track structure (see figure 2).

5. With respect to claim 38, The Research disclosure does disclose a deflectable seat cushion on the frame (see figure 1).

6. With respect to claim 39, the Research disclosure does disclose the vehicle seat frame having a bottom portion and a back portion which together bear a vehicle occupant weight load (figure 1, forces A and B).

7. With respect to claims 40-47, 49-50, 54 and 55, the limitations of this claim has been noted in the rejections above and figure 3 and the related text of the Harris reference. It is therefore considered rejected as set forth above. It is noted that the each of the sensor does have the support portion mounted on to the vehicle seat track member (see figure 7B, item 20).

8. With respect to claims 48 and 51, Gognon does disclose the restraint device is not deployed if the seat occupant weight is below a predetermined weight (see at least column 2, lines 25-31, column 7, lines 1-9).

9. With respect to claim 52, the published Research Disclosure 39916 does suggest the step of determining a center of gravity of the seat occupant from the signals (see the second paragraph in the Method section).

10. With respect to claim 53, the published Research Disclosure 39916 does disclose the step of controlling a safety restraint device based on the seat occupant weight and center of gravity (see the first paragraph and the Method section).

11. Claims 58-60 and 66-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over the published Research Disclosure 39916 in view of Gognon and Harris as applied to the claims above, and further in view of Huss (5,343,755).
12. The Research disclosure, Gognon and Harris disclose the claimed invention as discussed above except that the sensor includes a sensor interface circuit includes a pulse width modulation and a two stage signal amplifier and a temperature control. However, Huss suggest a stain gauge sensor which includes those features in at least the abstract, figure 2 and the related text. It would have been obvious to one of ordinary skill in the art to combine these teaching to provide the detail about the load cells which are used in the weight sensing apparatus for a vehicle seat.
13. Claims 61-65 and 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over the published Research Disclosure, Gognon and Harris as applied to the claims above, and further in view of Mazur et al. (5,906,393).
14. With respect to claims 61 and 69, the Research disclosure, Gognon and Harris disclose the claimed invention as discussed above except that the controller calculates weight of an occupant by sampling the response of the load sensor. However, such feature is shown in at least figure 2 of the Mazur et al. reference. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate such teaching of Mazur into the combination system of the research, Gognon and Harris in order to provide more accuracy of the occupant weight.
15. With respect to claims 62 and 70, Mazur et al. do suggest that the sample rates is vary from 20ms to 100ms depends on the occupant weight or can be fixed (see at least column 7, lines 7-38).
16. With respect to claims 63 and 71, the published Research Disclosure 39916 does that the totat weight is the summation of all the signals from the load sensors an

since each signal is sampled, which is obvious to take the average of each signal over time in order to obtain a more accuracy of the weight signal.

17. With respect to claims 64 and 72, the published Research Disclosure 39916 does disclose that the occupant center of gravity based on the measurement taken by the sensor and the determination of occupant position is based on the total weight and center of gravity (see the Method section).

18. The amended claims 56 and it's dependent 57 are allowable.

19. Claims 58-60, 65-68 and 73 are objected to as being dependent upon a rejected base claim, but would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims

(11) Response to Argument

A. Appellant argued that the Harris reference used is non-analogous art and has no suggestion or motivation to combine. The following is the examiner's answer:

In response to Applicant's argument that the rejection improperly relies upon nonanalogous art Harris reference, it has held that the determination that a reference is from a nonanalogous art is twofold. First we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the invention was involved. *In re Wood*, 202 USPQ 171, 174 (CCPA 1979). In the demonstrate that the Wood test supports a conclusion that the art is nonanalogous. The rejection is obvious from the point of view of the ordinary skill in the art, the engineer, to see the Harris reference

which has weighting system in the vehicle art and does includes the load cell system having a strain gauge mounting assembly (see at least the abstract) which is no doubt that it is an analogous art. This is the third reference used to reject the claimed invention. If this art clearly disclose the field of determining weight and position of a vehicle seat, then the rejection should not be rejected under 103(a). The ordinary skill in the art views and takes the load cell with the deflectable portion, which limitation is silent in the first and second references used, to combine with the system of the first and second reference to provide the claimed invention.

In response to appellant's argument that there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some logical reason why one skill in the art would be motivated to make the proposed combination of references. *In re Regel* 188 USPQ 136 (CCPA 1975). However, there is no requirement that the motivation to make the combination be expressly articulated in one or more of the references; the teaching, suggestion or inference can be found not only in the references but also from knowledge generally available to one of ordinary skill in the art. *Ashland Oil v. Delta Resins* 227 USPQ 657 (CAFC 1985). The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In McLaughlin* 170 USPQ 209 (CCPA 1971); *In re Rosselet* 146 USPQ 183 (CCPA 196). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In Re Simon*, 174 USPQ 114 (CCPA 1972); *In Re Richman* 165 USPQ 509, 514 (CCPA 1970). Since Gargon suggests a seat occupant weight sensing system including load cells or strain gauge, but does not disclose the deflectable portion. Obviously, the strain gauge as taught by Gargon can be used in place of the load cell in the system of Research Disclosure since it is well known and available at the

time the invention was made. While Harris suggest the load cells and described both strain gauges and deflectable portion in order to bend in the same way when the force is applied, i.e. example more detail about the load cells, it would have been motivated one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Gargon and Harris into the system of Research Disclosure in order provide more detail of apparatus with the weight system. Thus, the rejection under 35 U.S.C. § 103(a) is considered to be proper.

B. Appellant argued that Harris does not teach a seat sensor with a deflectable portion that deflects in response to an occupant weight force that is applied to the seat structure. The following is the examiner's answer:

If Harris does teach the limitation as argued above, then the rejection should be 102 instead of 103. The examiner use the Harris reference since it disclose both the full bridge circuit (strain gauge) and the deflectable portion to provide more detail about the weight sensor assembly.

C. Appellant argued that there is teaching of the deflectable portion to be positioned between the mounting portion attached to a seat structure and the support portion that is mounted on the seat track. The following is the examiner's answer:

Examiner provided that the Gargon does suggest such support portion as shown in figure 7B, item 20 which is quite the same as the on of the present invention.

D. Appellant argued that Gagnon reference does not disclose the feature that the safety restraint device is not deployed if seat occupant weight is below a predetermined weight. Examiner did recite see at least column 7, lines 1-9 which does talk about small

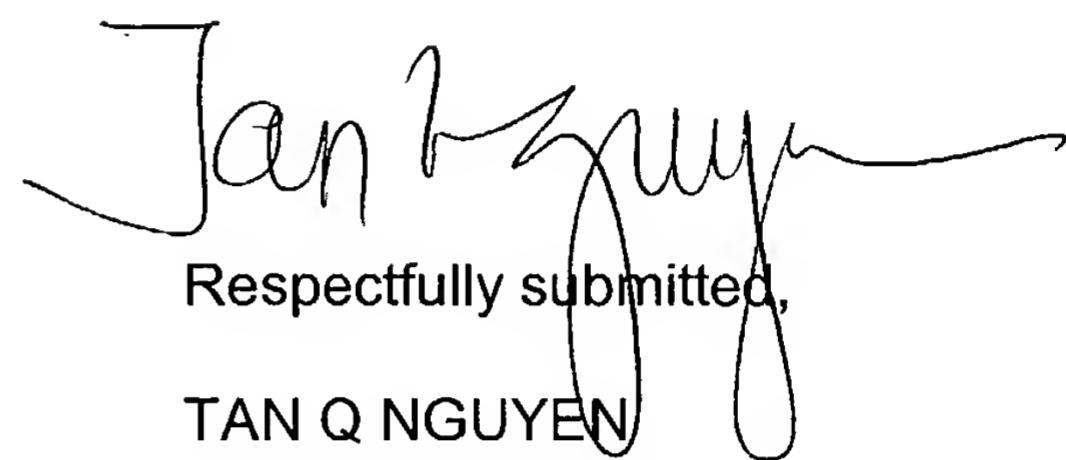
child less than a preselected amount in order to controls the activation of the airbag. The Gagnon does not spell out word by word as in the claim but It is too obvious to an ordinary skill in the art at the time the invention was made to disable the airbag when there is a small child in the front seat. For example, on column 2, lines 25-30 does disclose the method for determine whether the occupant weight up to 40 lbs or more than 40 lbs then send an appropriate signal to the safety device. Furthermore, the Research Disclosure does suggest that the air bag is disable when there is an empty seat or there is a rear facing infant seat, which obvious based on the weight and it should be less than a predetermined amount.

E-F. Appellant argued that examiner has not provides any arguments as to where these features are disclosed in the references. Examiner provides the support as set forth as above.

K. Appellant argue that there is no teaching of the step of generating a correction factor based on the center of gravity and determining a corrected occupant weight by modifying the total weight by the correction factor. Examiner agreed with the appellant, therefore, the rejection applied to claims 65 and 73 has been withdrawn and they are are objected to as being dependent upon a rejected base claim, but would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims.

(12) Conclusion

In view of the reasons set forth above, it is believed that the rejections should be sustained.

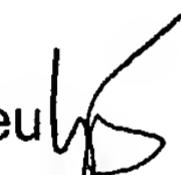

Respectfully submitted,

TAN Q NGUYEN
Primary Examiner
Art Unit 3661

July 9, 2004

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July 1997 Number 10

The International Journal of
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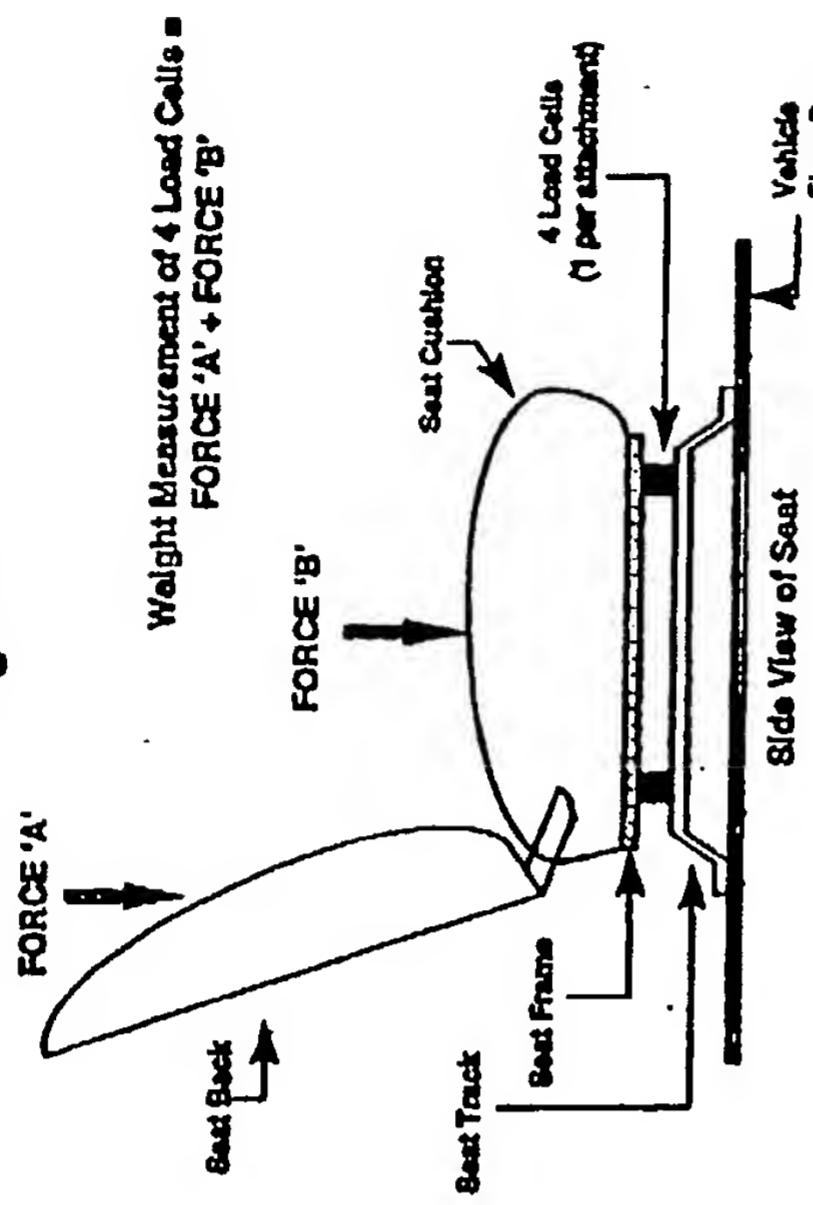
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39916
Weight Sensing for Occupant Restraint Systems Utilizing Load Cell Technologies

P.3/3

Figure 1



Vehicle occupant weight information can be used to tailor the deployment characteristics of the airbag and other restraint system devices. The weight information can also be used to switch airbags and similar restraint systems completely off for empty seats or occupants where deployment of the system would be inappropriate (e.g., New Born Infant Seat). Current technologies measure the force only on a portion of the seat cushion, making these technologies susceptible to inaccurate measurements for occupants exerting varying amounts of force against the seat back (due to recline angle, posture, etc.). The proposed method measures the force exerted by the occupant on the entire seat and thus compensates for the recline angle and posture inaccuracies of existing technology.

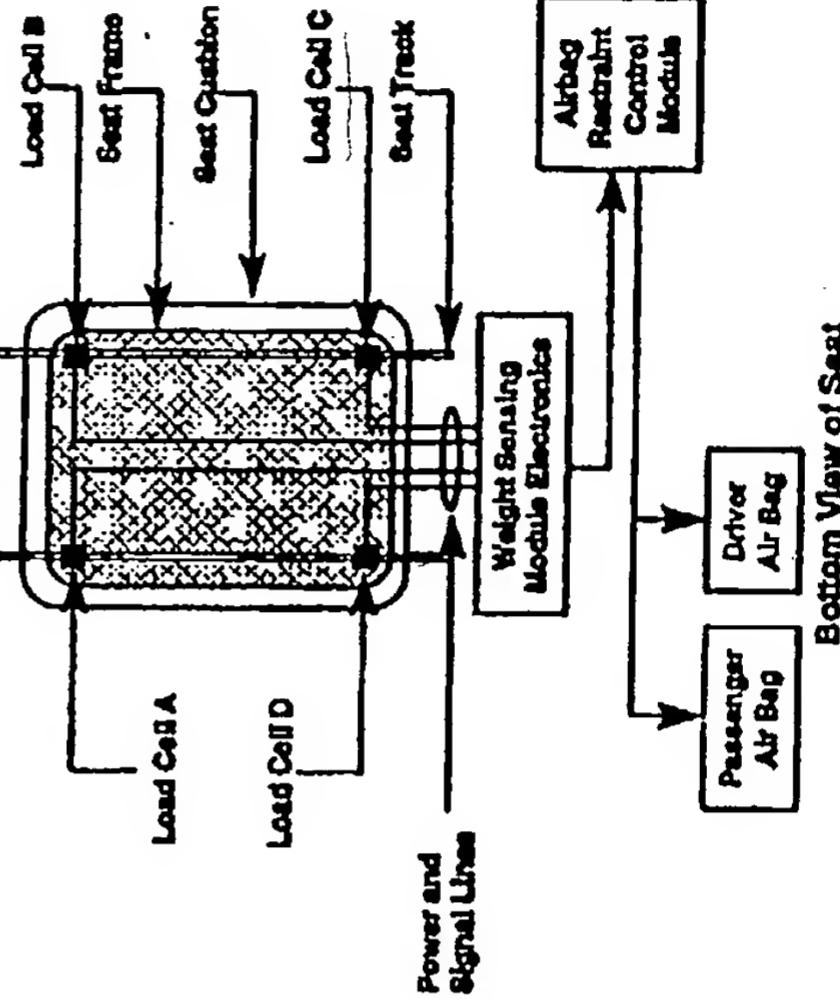
METHOD

As shown in Figure 1, the four load cells are attached between the seat frame and the seat track at the mounting points. The load cells respond to the normal forces (both tension and compression) being exerted on the seat track allowing a measurement of the weight of the seat and the seat occupant. By subtracting off the known weight of the seat, an accurate measurement of the object in the seat can be obtained.

The four load cells output a voltage ratio metric to the force (tension or compression) being applied to the load cell. These voltages are then processed by the Weight Sensing Module Electronics (Referenced Figure 2). The Weight Sensing Module Electronics also provides the stimulation voltage for the load cells. The load cell output signals can be summed electronically by the Weight Sensing Module to obtain a total weight reading for the occupant. The load cell output signals can be independently processed to read the force exerted on each load cell. This information can be used to calculate the center of mass for an occupant. The center of mass calculation is useful information for determining the position of an occupant.

CONCLUSION

By using the method described above it is possible to obtain an accurate reading of the total weight an occupant is exerting on the seat regardless of the position of the occupant and/or seat. In addition, by using load cell devices which can measure both tension and compression, the system is capable of measuring negative forces due to an excessive amount of seat recline angle. This allows correct measurement of the weight being exerted on the seat by the occupant. The electronics of the weight sensing module can be incorporated into the Airbag Restraint Control Module. It should also be noted that this design can be used with various load cell designs.



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